REMARKS

Applicants thank the Examiner for indicating that claims 13-19 and 34-40 would be allowable if rewritten in independent form to include all limitations of any intervening claims.

Claims 1-23 and 30-44 are pending in the application. Claims 1, 5, 9, 20, 30 and 41 are independent. By the foregoing Amendment, claims 1, 3-5, 7-10, 20-21, 30-31, and 41-42 have been amended. These changes are believed to introduce no new matter and their entry is respectfully requested.

Rejection of Claims 4 and 8 Under 35 U.S.C. §112, Second Paragraph

In the Office Action, the Examiner rejected claims 4 and 8 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the applicant regards as the invention citing informalities. By the foregoing Amendment, Applicants have amended claims 4 and 8 to accommodate the Examiner. Accordingly, Applicants respectfully request that the Examiner reconsider and remove the objection to claims 4 and 8.

Rejection of Claims 1-44 Under 35 U.S.C. § 112, First Paragraph

In the Office Action, the Examiner rejected claims 1-44 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse the rejection.

The courts have described the essential question to be addressed in a description requirement issue in a variety of ways. An objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989). Under *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991), to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed. The test for sufficiency of support in an application is

whether the disclosure of the application relied upon "reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter." *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)). MPEP §2163.02

Applicants respectfully submit that of Applicants' Specification reasonably conveys to the artisan that Applicants had the subject matter of claims 1-44. For example, paragraph [**0026**] of Applicants' Specification reasonably conveys "increasing a first memory bandwidth if a demand for memory bandwidth is less than the first memory bandwidth and decreasing a first memory bandwidth if a demand for memory bandwidth is more than the first memory bandwidth." Accordingly, Applicants respectfully request that the Examiner reconsider and remove the objection to claims 1-44.

Rejection of Claims 1-12, 20-23, 30-33, and 41-44 Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 1-12, 20-23, 30-33, and 41-44 under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,953,685 to Bogin et al. (hereinafter "*Bogin*") in view of U.S. Patent No. 6,021,076 to Woo et al. (hereinafter "*Woo*"). Applicants respectfully traverse the rejection.

To establish a *prima facie* case of obviousness, the Examiner must show that the cited references teach each and every element of the claimed invention. (MPEP §2143.) *citing In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). A patent composed of several elements is not proven obvious merely by demonstrating that each of its elements was independently known in the prior art. *KSR Int'l C. v. Teleflex, Inc.*, No 04-1350 (U.S. Apr. 30, 2007). If a combination or modification to a reference is used, an Examiner must show that there is some expectation of success that the combination or modification proffered would predictably result in the claimed invention. Obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the U.S. Supreme Court in *KSR* include the *Graham* factors of determining the scope and content of the prior art, ascertaining the differences between the claimed invention and the prior art, and resolving the level of ordinary skill in the pertinent art.

Once the *Graham* factual inquiries are resolved, the Examiner must explain why the difference(s) between the cited references and the claimed invention would have been obvious to one of ordinary skill in the art. The rationale used must be a permissible rationale. The USPTO promulgated Examination Guidelines for Determining Obviousness in View of *KSR* in the Federal Register, Vol. 72, No. 195 (October 10, 2007). These *KSR* Guidelines enumerate permissible rationales and the findings of fact that must be made under the particular rationale.

Embodiments of the present invention operate by increasing bandwidth when accesses to memory are less than anticipated and by decreasing bandwidth when accesses to memory are more than anticipated. According to one embodiment, a computer system has gone into throttle mode and is attempting to reduce power consumption. Normally, to accomplish this, during throttling a memory controller is allocated a certain amount of accesses and if it exceeds that amount ***all*** the memory accesses are blocked for a particular period of time. This is how *Bogin* appears to operate. Applicants' Specification also describes this at paragraph [**0006**].

Embodiments of the present invention allow a memory controller to access memory even after it has reached its allocated bandwidth so that ***all accesses are not blocked***. It operates as follows. The less traffic there is during a specific period of time means that less power is consumed. This is rewarded by allowing more traffic in later time periods. Conversely, the more memory traffic during a specific period of time means more power is consumed, which is penalized by allowing less traffic in later time periods. Thus, embodiments of the present invention increase bandwidth when accesses to memory are less than anticipated and decrease bandwidth when accesses to memory are more than anticipated because when accesses to memory are less than anticipated there is more power budget available and so bandwidth can be increased while when accesses to memory are more than anticipated there is less power budget available and bandwidth should be decreased.

Representative claim 1 recites in pertinent part "allocating ***a first memory bandwidth***; and increasing the first memory bandwidth to ***a second memory bandwidth*** if a demand for memory bandwidth is less than the first memory bandwidth; and decreasing the first memory bandwidth to ***a third memory bandwidth*** if a demand for memory bandwidth is greater than the

first memory bandwidth" (emphasis added). Independent claims 5, 9, 20, 30, and 41 recite similar subject matter.

In the Office Action, the Examiner states that *Bogin* discloses allocating an original percentage of bandwidth or number of access to memory by a memory controller and decreasing the bandwidth or number of access allocated to the memory controller to a percentage lower than an original bandwidth or number of accesses allocated when accesses to memory by the memory controller are more than the original percentage of bandwidth or number of accesses allocated to the memory controller. The Examiner concedes that *Bogin* fails to disclose ***increasing*** the allocated bandwidth or number of accesses when the actual bandwidth or number of accesses is ***less than*** the originally allocated bandwidth or number of access but cites *Woo* for disclosing ***increasing*** the allocated bandwidth or number of accesses when the actual bandwidth or number of accesses is ***less than*** the originally allocated bandwidth or number of access. In the Response to Arguments section of the Office Action, the Examiner states that Applicants' arguments are not persuasive because Applicants present arguments that attack the references individually, rather than a combination. Applicants respectfully disagree.

Neither the *Bogin* patent nor the *Woo* patent, ***alone or in combination***, appears to perform the above counterintuitive function. *Bogin* does not disclose variable allocation between first, second, and third bandwidths, but has a fixed allocation pre-programmed at power up of the computer. That is, *Bogin* does not begin with a first bandwidth, increase it to a second bandwidth if memory accesses are lower than anticipated and decreases to a third bandwidth if memory accesses are higher than anticipated. The mask in *Bogin* does not allow the three-way function performed by embodiments of the present invention, but blocks the memory access if the pre-programmed allocation is reached. Thus, *Bogin* performs a binary function of only decreasing the bandwidth to a lower value if accesses to memory are more than anticipated, which the Examiner concedes.

Woo also fails to disclose variable allocation between first, second, and third bandwidths. *Woo* appears to teach activating and deactivating a thermal regulation scheme, which is a binary "on" – "off" process, not a three-way process. Assuming for the sake of argument that

deactivating the thermal regulation scheme in *Woo* may "increase memory bandwidth," deactivating the thermal regulation scheme in *Woo* ***only returns the system in Woo back to the original memory bandwidth***. *Woo* does not increase memory bandwidth to a value higher than the original memory bandwidth. Thus, at best, the combination of *Bogin* in view of *Woo* only performs binary allocation. The element of ***increasing the memory bandwidth*** allocated to the memory controller ***to a value higher than the first value if a demand for memory bandwidth by the memory controller is less than the first value*** is still missing from the combination of *Bogin* in view of *Woo*.

Thus, Applicants respectfully submit that *Bogin* in view of *Woo* fails to disclose each and every element of claims 1, 5, 9, 20, 30, and 41 in that *Bogin* in view of *Woo* fails to disclose "allocating ***a first memory bandwidth***; and increasing the first memory bandwidth to ***a second memory bandwidth*** if a demand for memory bandwidth is less than the first memory bandwidth; and decreasing the first memory bandwidth to ***a third memory bandwidth*** if a demand for memory bandwidth is greater than the first memory bandwidth" (emphasis added). As a result, *Bogin* in view of *Woo* fails to render claims 1, 5, 9, 20, 30, and 41 obvious and thus claims 1, 5, 9, 20, 30, and 41 are patentable over *Bogin* in view of *Woo*.

Claims 2-4 properly depend from claim 1 and are thus patentable for at least the same reasons that claim 1 is patentable. Claims 6-8 properly depend from claim 5 and are thus patentable for at least the same reasons that claim 5 is patentable. Claims 10-12 properly depend from claim 9 and are thus patentable for at least the same reasons that claim 9 is patentable. Claims 21-23 properly depend from claim 20 and are thus patentable for at least the same reasons that claim 20 is patentable. Claims 31-33 properly depend from claim 30 and are thus patentable for at least the same reasons that claim 30 is patentable. Claims 42-44 properly depend from claim 41 and are thus patentable for at least the same reasons that claim 41 is patentable. (MPEP §2143.03 (citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)). Accordingly, Applicants respectfully request that the Examiner reconsider and remove the rejection to claims 1-12, 20-23, 30-33, and 41-44.

CONCLUSION

Applicants respectfully submit that all grounds for rejection have been properly traversed, accommodated, or rendered moot and that the application is now in condition for allowance. The Examiner is invited to telephone the undersigned representative if the Examiner believes that an interview might be useful for any reason.

Respectfully submitted,

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I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below.

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